REMARKS

Claims 1 and 3-10 are currently pending in the application, of which claims 1, 6 and 7 are independent.

Claims 1 and 3-10 stand rejected under 35 U.S.C. 103(a) as being unpatentable over *Feedforward Frequency Estimation for PSK a Tutorial Review*, IEEE Vol. 9, No. 2 March-April 1998; pg. 103-116 (Morelli) in view of U.S. Patent No. 5,553,014 (De León).

Applicants submit that, for a proper rejection under 35 U.S.C. 103(a) based on a combination or references, the prior art references when combined must teach or suggest all the claim limitations. (MPEP 706.02(j)).

All of the claim limitations of claim 1 are not taught or suggested by Morelli or De León, either taken alone or in combination, at least because claim 1 recites a communication system that comprises:

> a transmitter and a receiver intended to receive symbols coming from a phase-shift keying modulation … and
>
> estimation means for estimating a frequency error relating to a symbol based on a sequence of symbol phases, characterized in that **said receiver comprises calculation means for calculating a phase sequence, called an initial sequence, based on decisions made on symbols, and means for detecting and correcting phase jumps in this initial sequence, to supply a phase sequence, called final sequence, to said frequency error estimation means**.

(emphasis added).

> The means for detecting and correcting phase jumps comprise:
>
> **modifying means for modifying said initial sequence so as to produce a plurality of modified sequence, which each compensate for a phase jump configuration, calculation means**

> **for calculating straight line equations which determine the initial sequence and the modified sequences,** and
>
> **calculation means for calculating for the initial sequence and the modified sequences a mean difference between the initial or modified phases and the phases produced by the corresponding straight line equation**, said final sequence being formed by the sequence whose mean difference is minimal.

(emphasis added).

As conceded in the Office Action, Morelli does not teach or suggest "modifying means for modifying said initial sequence so as to produce a plurality of modified sequence, which each compensate for a phase jump configuration, calculation means for calculating straight line equations which determine the initial sequence and the modified sequences," and "calculation means for calculating for the initial sequence and the modified sequences a mean difference between the initial or modified phases and the phases produced by the corresponding straight line equation, said final sequence being formed by the sequence whose mean difference is minimal."

For these deficiencies, the Examiner cites De León.

Applicant submits that De León describes an adaptive filter system including a coefficient calculator, but does not cure the deficiencies of Morelli.

De León is directed to an acoustic signal processing system for canceling out echoes between, for example, loudspeakers and microphones. (See De León at, for example, Abstract, col. 1, lns. 36-47, and FIG. 1). De León, does not teach or suggest, for example, the claimed "transmitter and a receiver intended to receive symbols coming from a phase-shift keying modulation," and "estimation means for estimating a frequency error relating to a symbol based on a sequence of symbol phases"

De León does describe the use of least mean square (LMS) algorithms, but De León does <u>not</u> teach or suggest, either alone, or in combination with Morelli, "modifying means

for modifying said initial sequence so as to produce a plurality of modified sequence, **which each compensate for a phase jump configuration**," nor "calculation means for calculating for the initial sequence and the modified sequences a **mean difference between the initial or modified phases and the phases produced by the corresponding straight line equation**, said final sequence being formed by the sequence whose mean difference is minimal."

Accordingly, applicant submits that neither Morelli nor De León, either taken alone, or in combination, teach, describe or suggest the invention recited by claim 1 of the present application, and thus, claim 1 is patentable over any Morelli-De León combination.

Claim 6, while differing in scope from claim 1, includes features similar to that of amended claim 1. For example, amended claim 6 recites a "method of estimating a frequency error relating to a received symbol coming from a phase-shift keying modulation, based on a sequence of symbol phases," including "modifying said initial sequence so as to produce a plurality of modified sequence, which each compensate for a phase jump configuration, calculating straight line equations which determine the initial sequence and the modified sequences, and calculating for the initial sequence and the modified sequences a mean difference between the initial or modified phases and the phases produced by the corresponding straight line equation, said final sequence being formed by the sequence whose mean difference is minimal."

Claim 7, while differing in scope from claim 1, recites several of the features described above with respect to claim 1. For example, claim 7 recites "a method of detecting and correcting phase jumps in an initial sequence of symbol phases coming from a phase-shift keying modulation." The method comprises "calculating for the initial sequence and the modified sequences a mean difference between the initial or modified phases and the phases produced by the corresponding straight line equation, said final sequence being formed by the sequence whose mean difference is minimal."

Accordingly, claims 6 and 7 are deemed patentable over any Morelli-De León combination for at least the same reasons discussed above with respect to the patentability of amended claim 1.

Each of claims 3-5, and 8-10 ultimately depend from one of claims 1, 6 and 7 and are deemed to be patentable, for at least the reasons described above with respect to the patentability of claims 1, 6 and 7.

Thus, applicants submit that each of the claims of the present application are patentable over each of the references of record, either taken alone, or in any proposed hypothetical combination. Accordingly, withdrawal of the rejections to the claims is respectfully requested.

In view of the foregoing, it is respectfully submitted that the currently-pending claims are in condition for allowance and favorable consideration is earnestly solicited.

Respectfully submitted,

Paul Im
Registration No. 50,418

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/ James Dobrow /
By: James Dobrow
Attorney for Applicant
Registration No. 46,666

Mail all correspondence to:

Paul Im, Registration No. 50,418
US PHILIPS CORPORATION
P.O. Box 3001
Briarcliff Manor, NY 10510-8001
Phone: (914) 333-9627
Fax: (914) 332-0615